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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/608,692	06/29/2000	Kent K. Leung	CISCP169	2397

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EXAMINER	
PHAN, MAN U	

ART UNIT	PAPER NUMBER
2665	

DATE MAILED: 11/28/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No. 09/608,692	Applicant(s) Leung
	Examiner Man Phan	Art Unit 2665

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136 (a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1) ☒ Responsive to communication(s) filed on *Jun 29, 2000*

2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.

3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11; 453 O.G. 213.

Disposition of Claims

4) ☒ Claim(s) *1-39* is/are pending in the application.

4a) Of the above, claim(s) _____ is/are withdrawn from consideratio

5) ☐ Claim(s) _____ is/are allowed.

6) ☒ Claim(s) *1-17 and 20-39* is/are rejected.

7) ☒ Claim(s) *18 and 19* is/are objected to.

8) ☐ Claims _____ are subject to restriction and/or election requirement

Application Papers

9) ☐ The specification is objected to by the Examiner.

10) ☐ The drawing(s) filed on _____ is/are a) ☐ accepted or b) ☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examine

If approved, corrected drawings are required in reply to this Office action.

12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

13) ☐ Acknowledgement is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a) ☐ All b) ☐ Some* c) ☐ None of:

1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____ .
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

*See the attached detailed Office action for a list of the certified copies not received.

14) ☐ Acknowledgement is made of a claim for domestic priority under 35 U.S.C. § 119(e).

a) ☐ The translation of the foreign language provisional application has been received.

15) ☐ Acknowledgement is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s). *2, 3, 4*
4) ☐ Interview Summary (PTO-413) Paper No(s). _____
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other:

DETAILED ACTION

1. The application of Leung for the "Methods and apparatus for implementing a proxy mobile node in a wireless local area network" filed 06/29/2000 has been examined. Claims 1-39 are pending in the application.

Drawings

2. This application has been filed with informal drawings which are acceptable for examination purposes only. Formal drawings will be required when the application is allowed.

Claim Objections

3. Claims 1, 5, 7, 13, 18, 20, 21, 24, 31, 34-39 objected to because of the following informalities:

The claims contain the phrase "capable of". It has been held that the recitation that an element is "capable of" perform a function is not a positive limitation but only requires the ability to so perform. It does not constitute a limitation in any patentable sense. *In re Hutchison, 69 USPQ 138.* Appropriate correction is required.

Claim Rejections - 35 USC § 103

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

5. Claims 1-39 are rejected under 35 U.S.C. 103(a) as being unpatentable over Lee et al. (US#6,535,493) in view of Chiou et al. (US#6,473,413).

With respect to claims 1, 5, 20 and 24, both Lee et al. (US#6,535,493) and Chiou et al. (US#6,473,413) disclose a novel system for routing information to a mobile unit in a data communications system having a home network (*home agent*) and a remote network (*foreign agent*) according to the essential features of the claims. Lee discloses in Fig. 1 a schematic diagram illustrated of a wide area system which is connected by using an Internet, in which each of the home and remote networks supports one or more mobile units and one or more stationary access points. The mobile unit has a unique address and may roam from the home network to the remote network. The mobile unit associates with one access point which serves as a home agent. When the mobile unit roams and is away from its home network, the apparatus discovers a physical location of the mobile unit by sending an agent advertisement packet from the access point. If the location of the mobile unit is not at the home network, the apparatus associates the mobile unit with one of the

access points on the foreign network which serves as a foreign agent. Next, the apparatus registers the mobile unit with the home agent, encapsulates original data received by the home agent which is destined for the mobile unit, forwards encapsulated data to the foreign agent, and converts the encapsulated data to the original data and delivers the original data to the mobile unit via the foreign agent (Col. 2; lines 51 plus). Lee further teaches in Figs. 3-9 the flow charts illustrated a registration process executing on the mobile unit (100 or 130) and on the access point (102, 104, 132 or 134). After the mobile unit 100 or 130 determines that it has moved to a subnet which is different from its home subnet, the mobile unit 100 or 130 registers with its home agent to request forwarding of services. As explained in more detail, the registration procedure is as follows: The mobile unit sends a registration request packet to its foreign agent; The foreign agent processes the request and then relays it to the home agent; The home agent sends a registration reply to the foreign agent to grant or deny the request; The foreign agent processes the reply and then relays it to the mobile unit. When a mobile unit changes its foreign agent, that is, when the mobile unit is roaming within the foreign subnet or to another foreign subnet, the re-registration process is repeated to maintain an accurate mobility binding list (Col. 6; lines 35 plus and Col. 8, lines 1 plus).

In the same field of endeavor, Chiou et al. (US#6,473,413) discloses a method and apparatus for allowing a mobile station to roam among various APs in different IP subnets utilizing MAC layer protocol with network layer protocol in the mobile IP. Chiou teaches in Figs. 1 & 2 schematic diagram illustrated a mobile station is roaming in WLANs. When a mobile station roams to a new IP subnet, it will issue a reassociation

request to an Access Point A in the new IP subnet. In response to the reassociation request, the Access Point A will need the IP address of the previous Access Point B in the previous IP subnet to send the handoff request to the Access Point B. So, the Access Point A can find the IP address of the Access Point B via the communication mechanism of mobile IP of IP layer and then send the handoff request frame to the Access Point B. In turn, upon receiving the handoff request frame, the Access Point B deletes the record of the mobile station in the association table and then sends the handoff response frame back to the Access Point A via the communication mechanism of mobile IR. The unicast handoff response frame will be forwarded to the Access Point A. Consequently, the Access Point A can complete the handoff procedure (See also the flow charts 3-5; Col. 2, lines 5 plus and Col. 7, lines 5 plus).

Regarding claims 2-4, 6-13, 21-23 and 25-32, Lee further teaches in Fig. 6 illustrated the process for analyzing a registration request 370. Initially, the process of Fig. 6 determines whether it has received a registration request in step 372. If not, the process of Fig. 6 is idled until a registration request has been received. Upon receipt of the registration request, the process of FIG. 6 proceeds to step 374 where the AP checks whether or not it is acting as a foreign agent. If so, the AP relays request to the home agent via the UDP protocol in step 376. This is done by writing a datagram to a user datagram protocol (UDP) port, which is encapsulated as either an Internet protocol (IP) version 4 (IPv4) Datagram or a IPv6 Datagram. The datagram is then sent to its destination. Each UDP datagram has a length and the datagram may be considered a record. If a datagram reaches its final destination correctly, the length of the datagram is

passed to the receiving application. UDP provides a connectionless service and therefore there is no long term relationship between a UDP client and the server. Alternatively, in the event that the AP is not acting as a foreign agent, the process of Fig. 6 checks whether or not the AP is acting in the capacity of a home agent in step 378. If not, the request is forwarded to the home agent indicated in the request for processing in step 380. Alternatively, if the current AP is acting as a home agent in step 378, the process of Fig. 6 further checks whether the current AP is to perform a registration or a deregistration of the mobile unit. In the event that a registration process is to be performed in step 382, the process of Fig. 6 proceeds to step 384 where it adds a reference to the mobile unit in its home agent table. From step 384, the current AP sends the registration reply packet to the foreign agent in step 386. In order to support forwarding of packets to a roaming unit, the home agent has to be able to intercept datagrams addressed to the mobile unit registered in its mobility binding list. This interception is enabled by a proxy Address Resolution Protocol (ARP) and a gratuitous ARP enable this interception. The ARP maps an IPv4 address into a hardware address, such as an Ethernet address. ARP is normally used on broadcast networks such as Ethernet, token ring and fiber-distributed data interface (FDDI), but is not needed on point-to-point networks. Typically, the source station resolves a destination MAC address of the appropriate destination by broadcasting a packet with the ARP request into the broadcast domain to which the source station is attached (Col. 10, lines 35 plus).

One skilled in the art would have recognized the need for effectively and efficiently enabling a node that does not support Mobile IP to roam from a first foreign

agent to a second foreign agent, and would have applied Chiou's teaching of the roaming among various access points in different IP subnets into Lee's novel use of the registration process in the mobile unit. Therefore, It would have been obvious to a person of ordinary skill in the art at the time of the invention was made to apply Chiou's method for inter-IP-domain roaming across wireless networks into Lee's mobile Internet communication protocol with the motivation being to provide a method and system for implementing a proxy mobile node in a wireless LAN.

6. Claims 14-17 and 33-39 are rejected under 35 U.S.C. 103(a) as being unpatentable over Lee et al. (US#6,535,493) in view of Chiou et al. (US#6,473,413) as applied to the claims above, and further in view of Willkie et al. (US#6,230,012).

With respect to claims 14-17, Lee and Chiou disclose the claimed limitations discussed in paragraph 5 above. However, Lee and Chiou do not expressly disclose the claimed feature of the proxy mobile node service supported in the communication link, the agent solicitation and the agent advertisement extension. In the same field of endeavor, Willkie et al. discloses a novel and improved system and method for performing mobile node registration. The method includes signaling, from a terminal device, a need for mobile data services, and initiating, in a wireless communication device, mobile node registration of the terminal device in response to the signaling step. The terminal device transmits packetized data, and the wireless communication device coupled to the terminal device for monitors the packetized data for an Internet Protocol (IP) address contained in an IP address request. The wireless communication device

initiates mobile node registration using the IP address if the IP address request is for a static IP address. The wireless communication device prevents the terminal device from sending or receiving packetized data when initiating mobile node registration, and allows the terminal device to send and received packetized data upon completion of mobile node registration. As a result, the mobile node registration occurs transparently to the terminal device, obviating the need for the terminal device to have its own Mobile IP support (Col. 5; lines 16 plus).

Regarding claims 33-39, they are computer program and means claims corresponding to the apparatus claims above. Therefore, claims 33-39 are analyzed and rejected as previously discussed with respect to claims 1-17 and 20-32.

One skilled in the art would have recognized the need for effectively and efficiently enabling a node that does not support Mobile IP to roam from a first foreign agent to a second foreign agent, and would have applied Willkie's proxy mobile node registration and Chiou's teaching of the roaming among various access points in different IP subnets into Lee's novel use of the registration process in the mobile unit. Therefore, It would have been obvious to a person of ordinary skill in the art at the time of the invention was made to apply Willkie's IP mobility support using proxy mobile node registration, and Chiou's method for inter-IP-domain roaming across wireless networks into Lee's mobile Internet communication protocol with the motivation being to provide a method and system for implementing a proxy mobile node in a wireless LAN.

Allowable Subject Matter

7. Claims 18 and 19 are objected to as being dependent upon the rejected base claims, but would be allowable if rewritten in independent form including all of the limitations of the base claims and any intervening claims.

8. The following is an examiner's statement of reasons for the indication of allowable subject matter: The closest prior art of record fails to disclose or suggest wherein the instructions for sending a first registration request, the first registration request including a subnet directed broadcast address identifying the determined home subnet; instructions for receiving a registration reply from one or more Home agents, each registration reply including an IP address for the associated Home Agent; and instructions for sending a second registration request to one of the Home Agents, the second registration request including the IP address for the one of the Home Agents, as recited in claim 18.

9. Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

Conclusion

10. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

The Leung et al. (US#6,466,964) is cited to show the methods and apparatus for providing mobility of a node that does not support mobility.

The Bhagwat et al. (US#6,651,105) is cited to show the method for seamless networking support for mobile devices using serial communications.

The Dynarski et al. (US#6,272,129) is cited to show the dynamic allocation of wireless mobile nodes over an IP network.

The Rai et al. (US#6,577,643) is cited to show the message and communication system in a network.

The Inoue et al. (US#6,587,882) is cited to show the mobile IP communication scheme using visited site or nearby network as temporal home network.

The Johnson et al. (US#6,625,135) is cited to show the method and apparatus for incorporating environmental information for mobile communications.

The Liu et al. (US#6,396,828) is cited to show the arrangement system and method relating to data network access.

The Hunt et al. (US#6,496,855) is cited to show the Web site registration proxy system.

11. Any inquiry concerning this communication or earlier communications from the

examiner should be directed to M. Phan whose telephone number is (703)305-1029. The examiner can normally be reached on Mon - Fri from 6:30 to 3:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Huy Vu, can be reached on (703) 308-6602. The fax phone number for the organization where this application or proceeding is assigned is (703)305-3988.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 305-3900.

12. **Any response to this action should be mailed to:**

Commissioner of Patents and Trademarks

Washington, D.C. 20231

or faxed to: (703) 305-9051, (for formal communications intended for entry)

Or: (703) 305-3988 (for informal or draft communications, please label "PROPOSED" or "DRAFT")

Hand-delivered responses should be brought to Crystal Park II, 2021 Crystal Drive, Arlington. VA., Sixth Floor (Receptionist).

Mphan

11/25/2003.